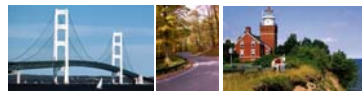




# **Context Sensitive Solutions**

## **Awareness Training for Metropolitan Planning Organizations**

November 2006



## **Developed by the Michigan Department of Transportation**

Cynthia Warzecha, MDOT  
Transportation Planner and Project Manager

Lynn Lynwood, MDOT  
Transportation Landscape Architect





## Instructors

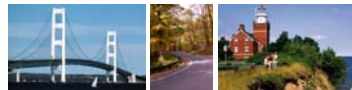
Craig Churchward, HNTB  
Transportation Landscape Architect

Karl Weissenborn, HNTB  
Transportation Landscape Architect



CSS AWARENESS TRAINING

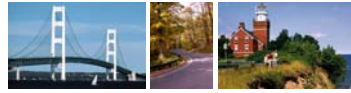
November 2006



## Purpose of Training

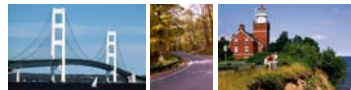
- Provide an understanding of CSS principles
- Provide knowledge of when and how to use CSS
- Provide a guide on how local, state, and federal units of government can work together to effectively deliver CSS
- Provide encouragement to practice CSS at a local level





## Class Structure

- Session 1: Introducing CSS
- Session 2: Engaging Stakeholders
- Session 3: Employing Interdisciplinary Teams
- Session 4: Embracing Multiple Modes
- Session 5: Understanding Context
- Session 6: Using Design Flexibility
- Session 7: Applying CSS



**[www.michigan.gov/mdot](http://www.michigan.gov/mdot)**

Click on "Project and Programs" then click on "Context Sensitive Solutions"



## Session 1: Introducing Context Sensitive Solutions



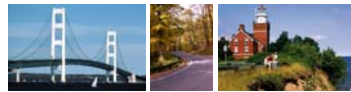
Bronx River Parkway, NY



Cincinnati, OH



Columbia River Gorge, OR



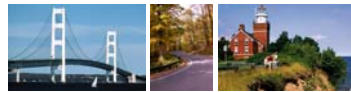
## Opening Exercise

1. What is your definition of CSS?
2. What is your favorite driving experience?  
Explain why.
3. What do you believe is the best example of CSS in your MPO, in Michigan, or the United States?  
Explain why.



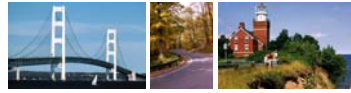
## FHWA & MDOT Definition of CSS:

"A collaborative, interdisciplinary approach that involves stakeholders to develop a transportation facility that fits its physical setting and preserves scenic, aesthetic, historic, and environmental resources while maintaining safety and mobility."



## Synonyms for Context Sensitive Solutions

- Thinking Beyond the Pavement
- Context Sensitive Design
- Community Sensitive Design
- Customer Sensitive Solutions
- Common Sense Solutions
- Placemaking
- Engineering Judgment
- Right-Sizing Projects



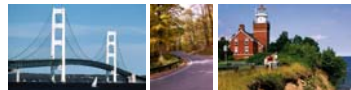
## Federal Policy

FHWA Administrator Mary Peters in a January 24, 2002 memo challenged her agency . . .

*"A transportation facility is an integral part of the community's fabric and it can help define the character of a community or it can destroy it."*



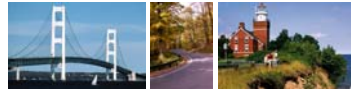
*"We should seek to institutionalize the principles of CSD with the same commitment that drove the implementation of the Interstate Highway System."*



## Dispelling Myths About CSS

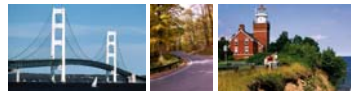
CSS is not about . . .

- Compromising safety and standards
- Responding *only* to the "squeaky wheel"
- Spending more time and money
- Tacking on enhancements



## What is CSS?

More than Mitigation . . .

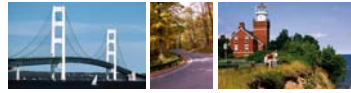


## What is CSS?

More than Mitigation . . .

More than Enhancements . . .



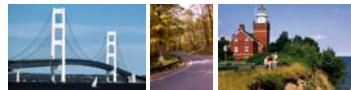


## What is CSS?

More than Mitigation . . .

More than Enhancements . . .

More than a Fad . . .

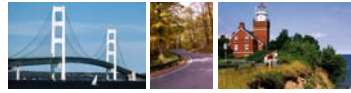


## What is CSS?

### Essential Principles and Practices

1. Engages stakeholders
2. Utilizes an interdisciplinary team
3. Embraces a multimodal approach
4. Serves and respects the environmental and social context of the transportation network
5. Provides a safe and efficient transportation system
6. Applies to all of the activities of the transportation agency





## What is CSS?

### Essential Principles and Practices

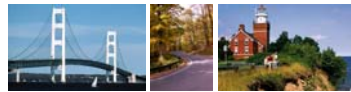
#### 1. Engages stakeholders

Involves stakeholders, builds partnerships, and recognizes community values.



#### 2. Utilizes an interdisciplinary team

Uses a wide range of professionals in an integrated approach to get comprehensive results.



## What is CSS?

### Essential Principles and Practices

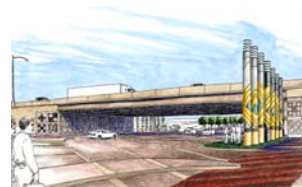
#### 3. Embraces a multimodal approach

Integrates all modes of transportation including pedestrians, bicycles, transit, motor vehicles, trains, ferries, ships, and airplanes.



#### 4. Serves and respects its context

Transportation must serve society and respect the constraints and opportunities provided by the natural and cultural environments that form its context.



I-43, Milwaukee, WI



## What is CSS?

### Essential Principles and Practices

5: Provides a safe and efficient system

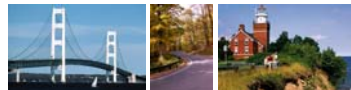
Safety and efficiency are a necessary and a primary goal of the transportation system.



I-696, Oakland County, MI

6: Applies to all transportation activities

CSS will be applied to all work from planning and design through construction and into operations and maintenance.



## American Road Building Eras

### The 19<sup>th</sup> Century

- Grassroots
- Multimodal

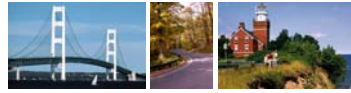
### The 20<sup>th</sup> Century

- Scientific
- Standardization

### The 21<sup>st</sup> Century

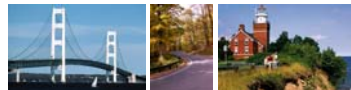
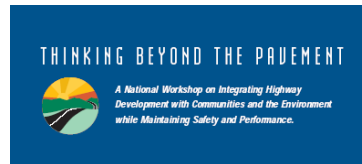
- Synthesis of 19<sup>th</sup> and 20<sup>th</sup> Centuries
- Context Sensitive Solutions





## Context Sensitive Solutions

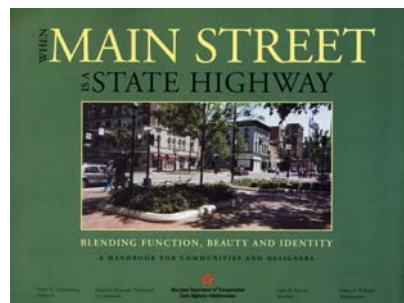
- 1998 *Thinking Beyond the Pavement* workshop
- Introduces the term *Context Sensitive Design*
- Results in the selection of six pilot agencies



## Context Sensitive Solutions

### Pilot States and Agencies

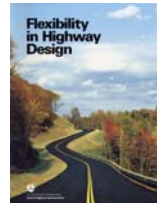
- Connecticut DOT
- Kentucky DOT
- Maryland DOT
- Minnesota DOT
- Utah DOT
- FHWA Eastern Federal Lands



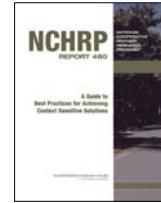


## Context Sensitive Solutions

- FHWA
- TRB/NCHRP
- AASHTO
- State of Michigan
  - Governor
  - Commission
  - MDOT



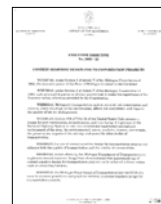
1997



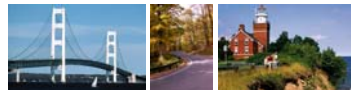
2003



2004



2003



## Motivations to Use CSS

### Transportation Stakeholders

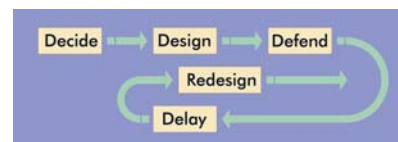
- CSS streamlines program delivery

### Community Stakeholders

- CSS improves the community's quality of life

### Common to all Stakeholders

- CSS forms partnerships out of competing interests





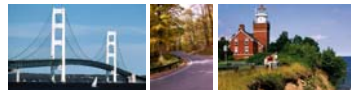
## Outcome 1

### An Operating Definition

CSS is an interdisciplinary process that engages all stakeholders in planning, designing, constructing, operating and maintaining a safe, effective, and integrated multi-modal transportation system that supports a community's vision.



I-35W, Minneapolis, MN



## Outcome 2

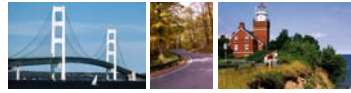
### An Operating Approach

CSS synthesizes the grassroots and multi-modal approach used by Americans in 19<sup>th</sup> Century with the scientific rigor they applied to solving transportation issues in the 20<sup>th</sup> Century. CSS fits our culture, our motivations, and it has been field tested.



US-2 Cut River Bridge, MI





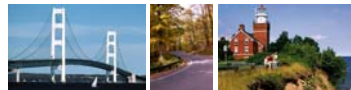
## Outcome 3

### An Operating Organization

All levels of government can and should work together to achieve context sensitive solutions, regardless of current jurisdictional boundaries.



Highway 21  
Washington County, MN



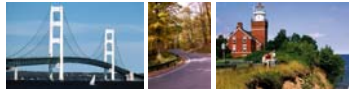
## Outcome 4

### An Operating Vision

Using CSS will increase public support for maintaining and improving Michigan's transportation system.

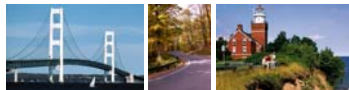


Edge of the Wilderness  
Scenic Byway, MN



## Session 2:

### Engaging Stakeholders to Create Context Sensitive Solutions

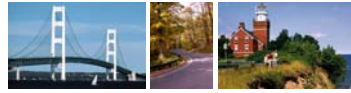


## Engaging Stakeholders

### Identify and Invite Stakeholders

- Inclusive
- Early
- Often
- Continuously





## Three Phases of Stakeholder Engagement

Phase 1:

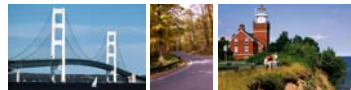
**Before Construction — Planning and Design**

Phase 2:

**Construction**

Phase 3:

**After Construction — Operations and Maintenance**

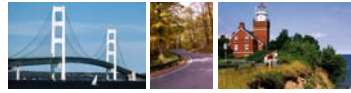


## Engaging Stakeholders Planning and Design

*What are the most effective methods you have used to identify stakeholders and incorporate their concerns during planning and design?*

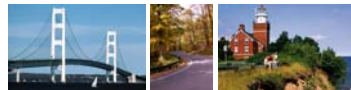




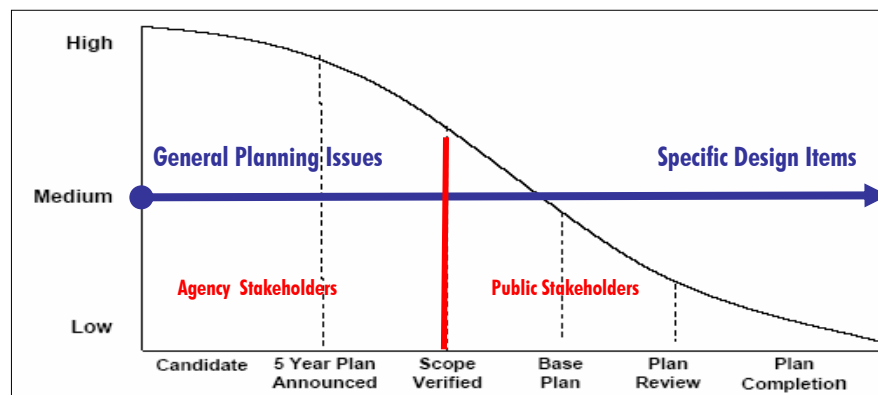


## Engaging Stakeholders During Planning and Design

Every community should establish procedures to identify and incorporate stakeholders and their concerns during the planning and design of its transportation system.



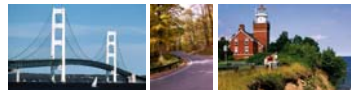
## Planning and Design Opportunity Curve





## Engaging Stakeholders During Planning and Design

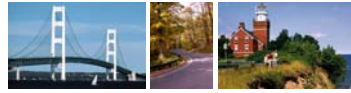
- **System Planning** – Agency stakeholders help define public policies, network needs and requirements, and establish a community vision.
- **Program/Corridor Planning** – Agency stakeholders help determine program or corridor goals, project priorities and schedule, and find funding
- **Project Scoping** – Agency stakeholders identify project scope, define purpose and need, define public stakeholders.



## Engaging Stakeholders During Planning and Design

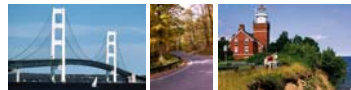
- **Preliminary Design** – Stakeholders verify purpose and need, define and assess alternatives, select a preferred alternative, determine mitigation and enhancement strategies.
- **Final Design** – Stakeholders review plans for conformance to purpose and need and mitigation and enhancement strategies, help make final design and construction scheduling decisions, establish cost sharing agreements.





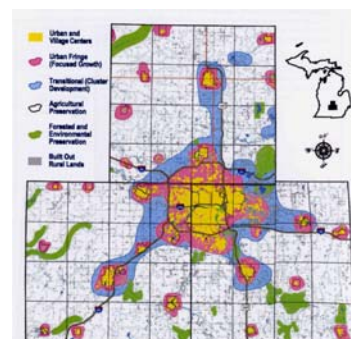
## The MPO Connection to CSS

- Roadway and land use planning are interrelated.
- Land use sets the stage for road design and vice versa.
- Coordinating roadway design with land use planning gives communities control over their appearance, how their roads function, and their quality of life.



## MPO Approaches to CSS in Michigan Tri-County Regional Planning Commission

- Focusing on establishing and maintaining a community vision and quality of life
- Creating a land use and community development framework to foster specific transportation development goals
- Coordinating and concentrating investments in public infrastructure

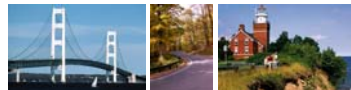




## MPO Approaches to CSS in Michigan

### Grand Valley Metro Council

- Form-based code prescribes the visual character of a community, particularly its public realm.
- Land use and road use are coordinated and mutually reinforcing.
- Existing examples of coordinated roads and land uses were identified as ideal models to be followed.



## Engaging Stakeholders During Construction

*What are the most effective methods you have used during construction to identify stakeholders and incorporate their concerns?*



I-94, Wayne County, MI



## Engaging Stakeholders During Construction

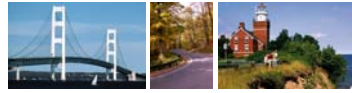
Every community should establish procedures to identify and incorporate stakeholders and their concerns during construction.



## Engaging Stakeholders During Construction

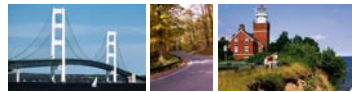
- Sustain community businesses and institutions
- Establish clear communications channels especially for emergencies
- Keep public informed about project status, especially changes in schedule, forms, or materials
- Create positive impressions of community





## US-131 S-Curve Replacement in Grand Rapids

- Call-in hot line
- Bussing and park and ride lots
- Media relations
- Newsletters
- Personal visits

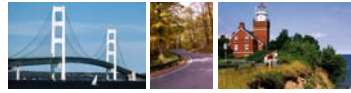


## Engaging Stakeholders During Operations & Maintenance

*What are the most effective methods you have used to identify stakeholders and incorporate their concerns during operations and maintenance?*

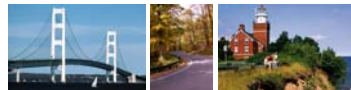






## Engaging Stakeholders During Operations & Maintenance

Continue to provide agency contacts, several alternative communication channels, and multiple opportunities for providing community feedback after construction.



## Engaging Stakeholders During Operations & Maintenance

- Traffic Management
- Maintenance Activities
- Community Events
- Community Development
- Monitoring Agreements
- Other Feedback Opportunities



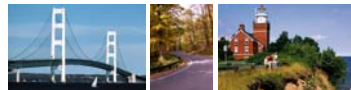


## Conclusion – Continuously Engage Stakeholders

Using CSS during planning, design and construction sets the stage and is extremely important in establishing community support. Using a CSS approach during traffic operations and during maintenance activities promotes long-term success.

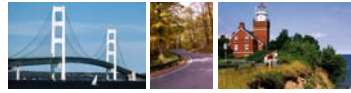


I-35E, St. Paul, MN



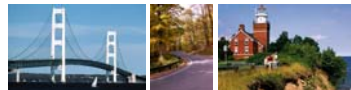
CSS is a bridge on which values are transferred from one side to the other.





### Session 3:

## Employing Interdisciplinary Teams for a Context Sensitive Solution



## Employing Interdisciplinary Teams

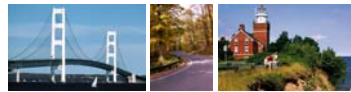
*Who should be on an interdisciplinary team for the planning and design of a community's transportation system?*





## Employing Interdisciplinary Teams

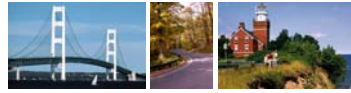
- Engineers
- Planners
- Landscape Architects
- Resource Specialists
- Social Scientists
- Economic Analysts
- Budget Administrators



## Employing Interdisciplinary Teams

*What is the best example you have of effectively using an interdisciplinary team on any municipal project? Who was on the team? How did it operate?*

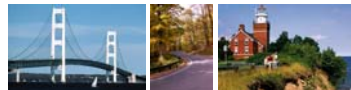
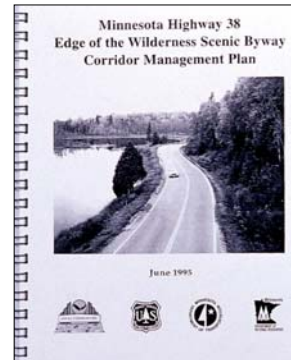




## Employing Interdisciplinary Teams

### Example from *Edge of the Wilderness Scenic Byway*

- Identical Worksheet
- 22 Resource Teams
- Regulators as designers
- Strong Agency Leadership
- Inter-Agency Leadership Cooperation
- Public Involvement Coordination
- Common Vision Evolved



## Employing Interdisciplinary Teams

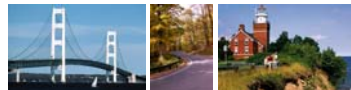
*What are some techniques that can be used to make an interdisciplinary team perform well?*





## Employing Interdisciplinary Teams

- Teams regularly meet together
- Develop ideas together
- Use sketches as minutes
- Written minutes are action items
- Employ shared space (studio, room, or wall)
- Virtual teaming with shared networks
- Teleconferencing



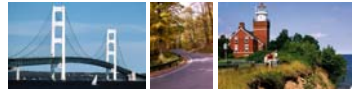
## Conclusion – Employing Interdisciplinary Teams

An interdisciplinary team:

- shares the vision
- enhances credibility and establishes rapport with stakeholders
- avoids being blind-sided
- reduces re-work
- increases efficiency

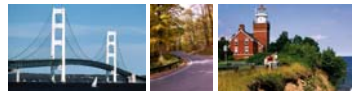


Zumbro River Bridge, Mantorville, MN



## Session 4:

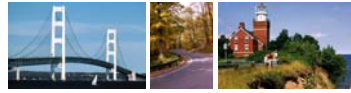
### Embracing Multiple Modes for a Context Sensitive Solution



### Attributes of a Multi-Modal Transportation System

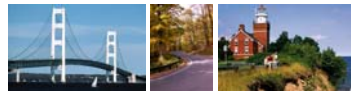
- Expands modal choices for a wider range of users;
- Decreases adverse impacts to the environment and society;
- Enhances mobility and access;
- Better balances costs and benefits?





## Integrating Multiple Modes

*What has your community done to integrate multi-modal solutions into its transportation network?*

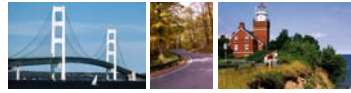


## Integrating Multiple Modes

- Driving
- Walking
- Bicycling
- Public Transit
- Rail Transportation
- Air Transportation
- Water Transportation







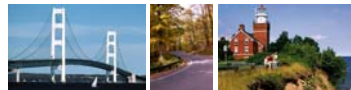
## Embracing Multiple Modes

### Driving

- Primary mode of transportation in US and Michigan
- Very flexible. Wide range of road, vehicle, and trip types. Tailored scheduling
- Relatively expensive. Restricted to those who have access to vehicles
- Contributes significantly to adverse environmental impacts



Columbia River Gorge  
Scenic Byway, OR



## Embracing Multiple Modes

### Walking

- Typically, the beginning and ending mode for all trips, requiring coordination with all other modes
- Trips typically under 1/2 mile or even 1/4 mile
- Paved surfaces typically preferred
- Spatial requirements determined by safety and comfort rather than capacity



Cincinnati, OH



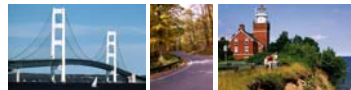
## Embracing Multiple Modes

### Bicycling

- Viable alternative to motorized vehicles, subject to seasonal constraints in some locations
- Wide range of skills and abilities—adults to children—with a wide range of motivations—commuting to recreation
- Predictable origins and destinations but unpredictable behavior—may disregard traffic management rules



Lansing, MI



## Embracing Multiple Modes

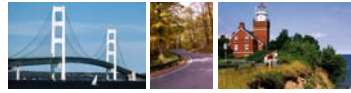
### Public Transit

- Wide range of types (BRT, Bus, LRT, Commuter Rail)
- Specific demographics
- Requires corridor and nodal density
- Infrastructure and operational costs typically subsidized
- Requires integration with other modes



LRT station, Minneapolis, MN





## Embracing Multiple Modes

### Rail Transportation

- Includes both intercity freight and passenger
- Passenger stations must be integrated with other modes, preferably located in CBD or other high-density nodes
- Inter-modal freight facilities must be coordinated with highways and the final destination of freight



## Embracing Multiple Modes

### Air Transportation

- Provide for both passengers and cargo
- Provide wayfinding between airport and major destinations
- Create a convenient and understandable landside layout
- Gateway fosters community identity



Pellston Airport, MI



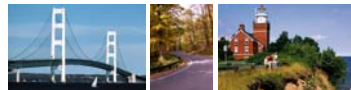
Cherry Capital Airport, Traverse City, MI



## Embracing Multiple Modes

### Water Transportation

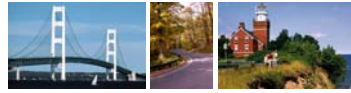
- Accommodate wide range of public and private watercraft for commuting and recreation
- As a gateway to community, establishes community identity
- Ferries provides alternative transportation to driving
- May require motor vehicle and boat storage facilities



## Conclusion

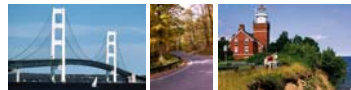
### Embracing Multiple Modes

- A network of multi-modal choices is essential for an efficient transportation system and a vibrant community, balancing impacts, costs, and benefits
- Prior to specific project development, the identification by the community of its multi-modal network is helpful
- Share your knowledge with other stakeholders
- Do not assume other partners are familiar with the community's vision or comprehensive plan



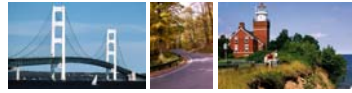
## Session 5:

### Understanding Context



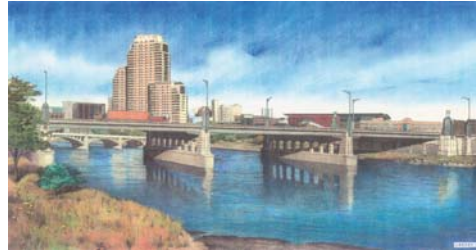
What is Context?



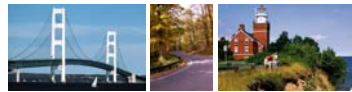


**Natural Environment**  
**+ Social Environment**  
**= Context**

The natural and social landscapes adjacent to the highway are the context of the transportation project.

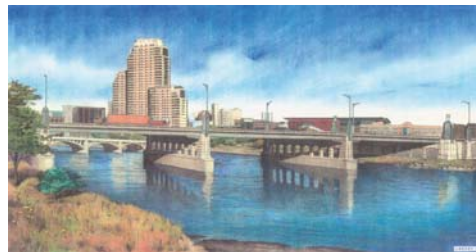


US-131, Grand Rapids, MI



**Natural Environment**  
**+ Social Environment**  
**+ Stakeholders**  
**= Value of the Context**

What people value is critical to determining what needs to be considered as part of the transportation project.



US-131, Grand Rapids, MI

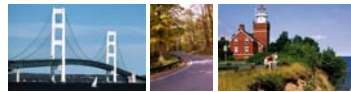


**"There are many landscapes  
without highways.  
There are no highways  
without landscapes."**

- Lynn Lynwood, ASLA  
MDOT Landscape Architect



I-94, St. Paul, MN



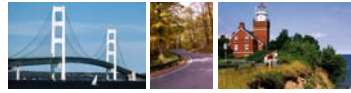
## Understanding Context

### What is the legal context?

- Natural and built environments
- Social, economic, environmental
- Specific protected resources







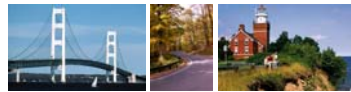
## Understanding Context

### The National Environmental Policy Act of 1969

- Applies to all federally funded projects
- Requires a review of **impacts**
- Requires a review of **alternatives**



Ames Lake wetland restoration  
St. Paul, MN



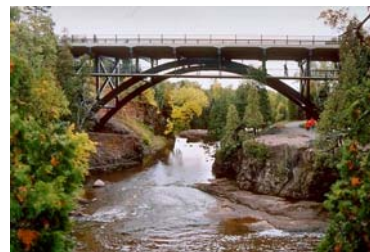
## Understanding Context

### What is an impact?

Any change in existing conditions

- Adverse or beneficial changes
- Major or minor changes
- Widespread or localized changes
- Long-term or short-term changes

Adverse impacts require avoidance, minimization, reduction, mitigation, or compensation

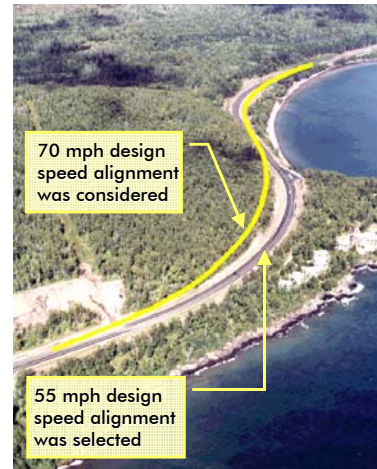




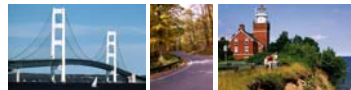
## Understanding Context

### What is an alternative?

- No-build alternative
- Build alternatives
- Operational alternatives
- Preferred alternative

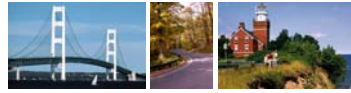


North Shore Scenic Byway, MN



## Environmental Review of Impacts and Alternatives

- **Categorical Exclusions (CE) - 90% of MDOT Work**  
Projects not causing significant impacts. Typically 3R Projects.
- **Environmental Assessments (EA) - 5% of MDOT Work**  
Discovery process to explore impacts, which may be significant (EIS) or not significant (FONSI).
- **Environmental Impact Statements (EIS) - 5 % of MDOT Work**  
Significant impacts expected from large and complex projects. Typically 4R Projects.



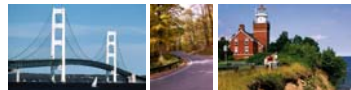
## Minor Projects

### Resurfacing, Restoration, Rehabilitation

- Preserves a transportation function
- Improves mobility, safety, capacity
- Alternatives more constrained—working with inches!
- Mitigating impacts more constrained
- Design flexibility required



US-23 drawbridge, Cheboygan, MI



## Major Projects

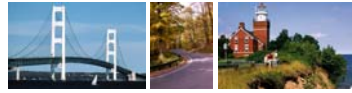
### Reconstruction on Existing Alignment Original Construction on New Alignment

- Improves mobility, safety, capacity
- Adds a transportation function
- Alternatives less constrained—working with hundreds of feet or even miles!!!
- Mitigating impacts less constrained
- Design flexibility required less often



I-94/US-24 Wayne County, MI



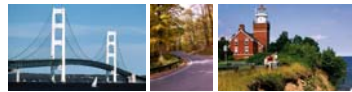


## CSS and Environmental Review: A Common Approach

- Requires collaborative and interdisciplinary teams
- Engages stakeholders
- Addresses and minimizes conflicts
- Employs transparent decision-making processes
- Balances mobility and safety with environmental issues



River Trail, Lansing, MI



## Conclusion – Environmental Review as a CSS Tool

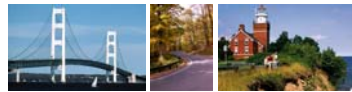
Environmental Review and CSS complement each other to plan, develop, and deliver transportation projects that benefit both communities and the natural environment.





## Session 6:

### Using Design Flexibility to Achieve Context Sensitive Solutions



## Design Flexibility

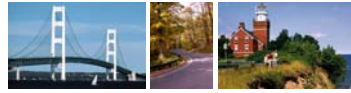
### Introduction

National standards dependent on  
local design factors such as:

- Roadway classification
- Terrain
- Traffic volumes
- Traffic composition



Okemos, MI

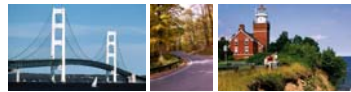
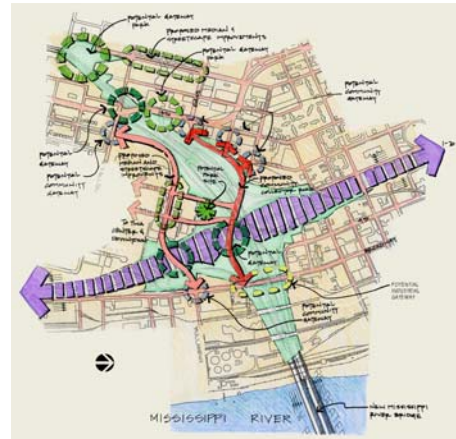


## Classification

A roadway's classification determines the range of design flexibility allowed.

Classification is a judgment, yet not arbitrary.

Changing the classification may create more flexibility but it also may have trade-offs.

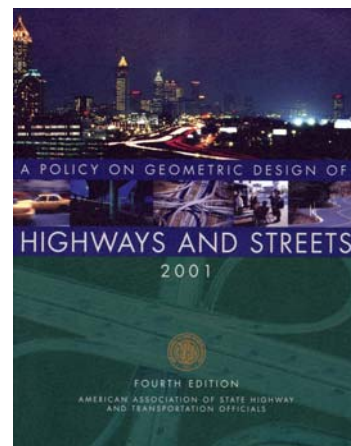


## Classification

Within a classification there is a range of values.

Typically, only the most conservative values are used; the whole range is rarely used.

Finding out why can lead to greater flexibility while maintaining safety and mobility.



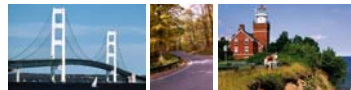
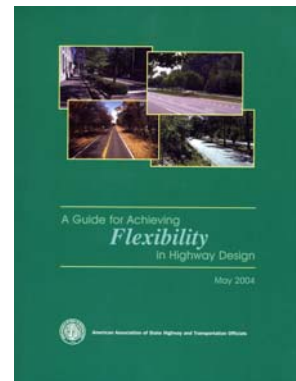


## Design Flexibility

### AASHTO Guidelines

Several AASHTO publications are useful to a CSS designer including:

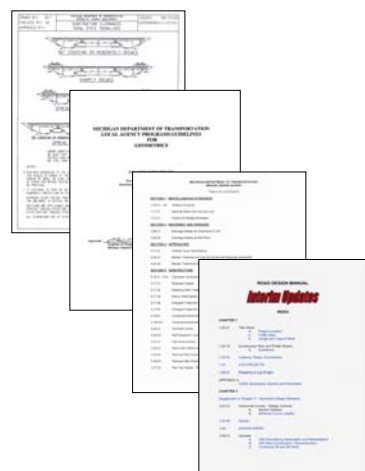
- *A Policy on Geometric Design of Highways and Streets (Green Book)*
- *A Guide for Achieving Flexibility in Highway Design*
- *A Guide for the Development of Bicycle Facilities*



## Design Flexibility

### MDOT Design Standards

- MDOT Road and Bridge Standard Plans
- MDOT Bridge Design Guide
- MDOT Geometric Design Guide
- MDOT Road Design Manual
- MDOT Bridge Design Manual

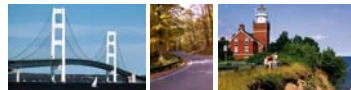
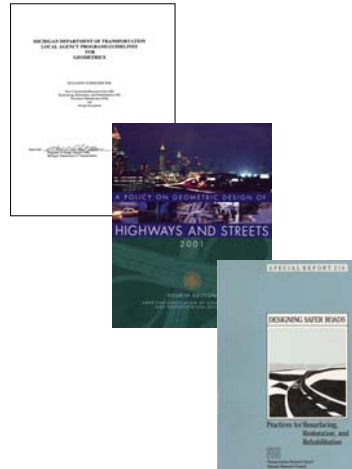




## Design Flexibility

### Local Agency Standards

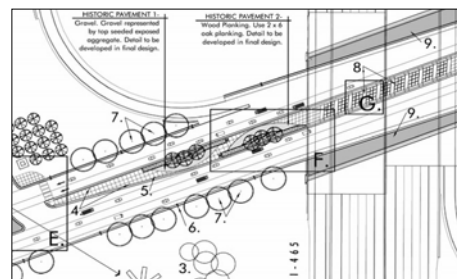
- MDOT Local Agency Program Guidelines for Geometrics
- AASHTO Green Book (3R/4R Projects)
- TRB Report 214, *Designing Safer Roads: Practices for Resurfacing, Restoration and Rehabilitation* (3R Projects)

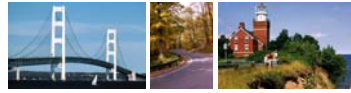


## Design Flexibility

### Design Exceptions

- Design speed
- Lane width
- Shoulder width
- Bridge width
- Structural capacity
- Horizontal alignment
- Vertical alignment
- Grade
- Stopping sight distance
- Cross slope
- Superelevation
- Vertical clearance
- Horizontal clearance (not including clear zone)
- Acceleration/deceleration ramp length

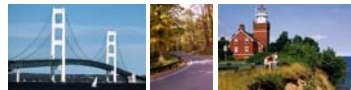




## Tort Liability

### Input from State Attorney General's Office

- Project scoping and design
- Governmental immunity
- Previous opinions involving design



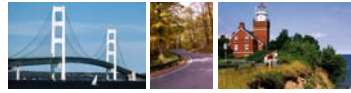
## Conclusion

- Design flexibility is available
- Practicing design flexibility is using good engineering judgment
- Practicing design flexibility will not increase an agency's or an employee's exposure to liability as CSS is practiced.
- Safety influences flexibility

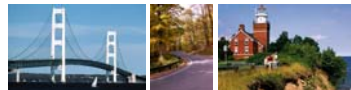


M-119, Emmet County, MI





## Session 7: Applying Context Sensitive Solutions



## Shared Responsibilities

*A successful CSS program will require **mutual commitment** on the part of both transportation agencies and stakeholders to identify appropriate opportunities to plan, develop, construct, operate and maintain infrastructure in accordance with CSS principles without undue costs or scheduling burdens.*

- MDOT CSS Policy



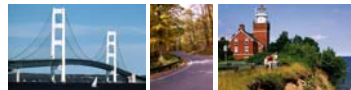
## Partnerships Takes Many Forms

Help identify unique community aspects

- What is...
- What was...
- What could be...

Share burdens and benefits through partnering

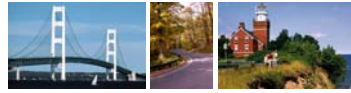
Promote involvement by stakeholders



## Partnerships Take Many Forms

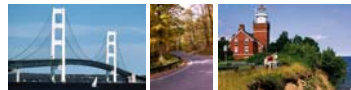
- Financial contributions
- Land exchanges
- Maintenance agreements
- Sharing of expertise
- Collective experiments
- Volunteers





## Financial Contributions

The City of Taylor and the Detroit Regional Gateway Advisory Group help pay for the difference in cost for the modified tied arch bridge



## US-10 and Eastman Road Interchange in Midland

- Early coordination
- Attention to Midland's Master Plan
- MDOT a stakeholder on city's entryway committee
- Partnerships forged

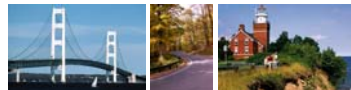




## Park and Ride Lot in Midland



Private investments and exchange of property facilitated the construction of this carpool lot with bus stop.



## Sharing Expertise

MDOT provided the design for a privately-funded non-motorized facility in Midland.

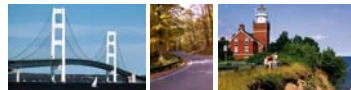




## Innovative Approach

### Cold milling and resurfacing of existing pavement

Community skeptical that a 3-lane road would be safer and more efficient than a 4-lane road. Community allowed stripping of 3-lane after MDOT assured the community the roadway would be re-stripped as four lanes if they were unhappy with the new configuration.

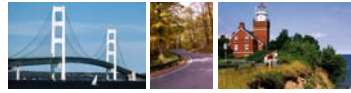


## Volunteers



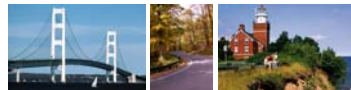
Master Gardeners have partnered with MDOT and the Genesee County Road Commission to design, install, and maintain annual flower displays at rest areas along I-75 and US-23.





## Measurement

*How can we — how should  
we — measure success?*



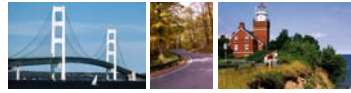
## Measurement

- Functional Appropriateness
- Community Support
- Environmental Compliance
- Financial Feasibility
- Social and Economic Progress



I-465, Indianapolis, IN



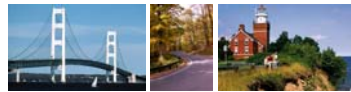


## Conclusion: CSS is Beneficial

- **Functional Appropriateness**  
Improved safety, mobility, and access
- **Community Support**  
Better public, regulatory, and political support for projects and transportation
- **Environmental Compliance**  
Enhanced environmental quality
- **Financial Feasibility**  
Superior cost-benefit ratio
- **Social and Economic Progress**  
Increased quality of life indicators



Watkins Memorial Drive, Kansas City



## Conclusion: CSS Works

### St. Croix Trail CSAH Highway 21 Washington County, Minnesota

- Let neighbors define issues, goals, and scope of project
- On-site meetings and adjustments to alignment as it was staked
- Aesthetic treatments mimicked rustic architecture from nearby state park
- Shoulder accommodate bicycle traffic
- Corrected only locations with crash history

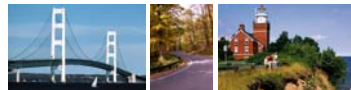




## Summary

*What one idea will you use from today's session to change how you conduct your business?*

*Please write a one paragraph personal action plan based on what you've learned today.*



[www.michigan.gov/mdot](http://www.michigan.gov/mdot)

**Thank You**